

Duluth, Minnesota, and Kitty Hawk, North Carolina, 35°; Cedar Keys, Florida, Fort Macon, North Carolina, and Sacramento, California, 34°; Galveston, Texas, and Sandy Hook, New Jersey, 33°; Cape May, New Jersey, and New Orleans, Louisiana, 32°; Provincetown, Massachusetts, 31°; Barnegat City, New Jersey, and Pike's Peak, Colorado, 30°; Block Island, Rhode Island, and Eastport, Maine, 29°; Hatteras, North Carolina, 28°; Willcox, Arizona, 27°; San Diego and San Francisco, California, 24°; Key West, Florida, 23°; Tatoosh Island, Washington Territory, 21°.

GREATEST DAILY RANGES OF TEMPERATURE.

The greatest daily ranges varied in the several districts as follows:

New England.—From 20° at Block Island, Rhode Island, on the 30th, to 29° at Boston, Massachusetts, on the 23d.

Middle Atlantic states.—From 18° at Cape May, New Jersey, on the 14th, to 34° at New York City on the 30th.

South Atlantic states.—From 22° at Hatteras and Fort Macon, North Carolina, on the 1st and 26th, respectively, to 30° at Augusta, Georgia, on the 27th.

Florida peninsula.—From 14° at Key West, on the 11th, to 26° at Sanford, on the 13th.

East Gulf states.—From 21° at New Orleans, Louisiana, on the 12th, to 30° at Montgomery, Alabama, on the 10th.

West Gulf states.—From 17° at Galveston, Texas, on the 22d, to 36° at Fort Smith, Arkansas, on the 9th.

Rio Grande valley.—From 29° at Brownsville, Texas, on the 15th, to 38° at Rio Grande City, Texas, on the 20th.

Tennessee.—From 28° at Nashville, on the 2d, to 30° at Memphis, on the 13th.

Ohio valley.—From 24° at Cincinnati, Ohio, and Indianapolis, Indiana, on the 2d and 29th, respectively, to 35° at Pittsburgh, Pennsylvania, on the 30th.

Lower lake region.—From 24° at Toledo, Ohio, on the 14th, to 35° at Cleveland, Ohio, on the 30th.

Upper lake region.—From 24° at Duluth, Minnesota, on the 22d, to 36° at Milwaukee, Wisconsin, on the 30th.

Extreme northwest.—From 31° at Bismarck, Dakota, on the 24th, to 36° at Fort Buford, Dakota, on the 24th.

Upper Mississippi valley.—From 23° at Saint Louis, Missouri, and at Cairo and Springfield, Illinois, on the 1st, 2d, and 29th, respectively, to 34° at Davenport, Iowa, on the 28th.

Missouri valley.—From 27° at Omaha, Nebraska, on the 17th, to 38° at Fort Bennett, Dakota, on the 3d.

Northern slope.—From 21° at North Platte, Nebraska, on the 27th, to 39° at Fort Shaw, Montana, on the 8th.

Middle slope.—From 17° on the summit of Pike's Peak, Colorado, on the 15th, and 32° at Denver, Colorado, on the 23d, to 46° at West Las Animas, Colorado, on the 9th.

Southern slope.—From 36° at Fort Davis, Texas, on the 25th, to 44° at Fort Stockton, Texas, on the 24th.

Southern plateau.—From 28° at Fort Grant, Arizona, on the 6th, to 46° at El Paso, on the 22d.

Middle plateau.—27° at Salt Lake City, Utah, on the 23d.

Northern plateau.—From 28° at Boise City, Idaho, on the 18th and 19th, to 40° at Dayton, Washington Territory, on the 7th.

North Pacific coast region.—From 24° at Fort Canby, Washington Territory, on the 8th, to 36° at Olympia, Washington Territory, on the 7th.

Middle Pacific coast region.—From 15° at San Francisco, California, on the 20th, to 29° at Red Bluff, California, on the 7th.

South Pacific coast region.—From 18° at San Diego, California, on the 4th, to 37° at Yuma, Arizona, on the 6th.

FROSTS.

Frosts occurred in the various districts on the following dates:

New England.—1st to 9th, 8th, 11th to 14th, 21st to 24th, 27th, 28th, 30th.

Middle Atlantic states.—1st to 15th, 17th to 23d, 25th to 28th, 30th.

South Atlantic states.—3d, 4th, 5th, 7th, 9th, to 12th, 17th, 25th to 27th.

Florida.—Cedar Keys and Archer, 10th.

Eastern Gulf states.—Mobile, Alabama, 24th.

Western Gulf states.—Arkansas: Little Rock, 9th; Fort Smith, 9th, 23d; Mount Ida and Lead Hill, 3d, 9th, 24th; Springfield, 3d, 8th, 9th, 24th. Louisiana: Shreveport, 9th; Liberty Hill, 3d, 8th, 9th, 23d, 24th. Texas: Cleburne, 9th, 23d; Clarksville, 9th, 23d, 24th; Barnesville, 10th, 23d; Indianola, 22d; Palestine, 23d.

Tennessee.—3d, 8th to 11th, 17th, 25th.

Ohio valley.—2d to 13th, 17th, 18th, 25th, 26th.

Lower lake region.—1st to 14th, 17th to 19th, 21st to 24th, 26th, 27th, 29th, 30th.

Upper lake region.—1st to 29th.

Extreme northwest.—1st to 12th, 14th to 24th, 26th to 30th.

Upper Mississippi valley.—1st to 12th, 16th, 17th, 19th to 25th, 28th, 29th.

Missouri valley.—1st to 13th, 15th, 16th, 19th to 25th, 27th, 28th.

Northern slope.—1st to 23d, 26th to 30th.

Middle slope.—1st to 10th, 12th, 13th, 16th to 27th, 29th, 30th.

Southern slope.—Fort Davis, Texas, 21st, 22d.

Southern plateau.—1st to 7th, 10th, 13th, 14th, 18th to 22d, 29th.

Middle plateau.—1st to 9th, 12th, 13th, 16th to 20th, 22d, 25th to 28th, 30th.

Northern plateau.—1st, 3d, 4th, 12th, 18th to 20th, 26th to 28th.

North Pacific coast region.—4th, 14th, 15th, 18th, 19th, 27th, 30th.

California.—Sacramento, 2d, 16th, 17th; Hydesville, 4th; Princeton, 28th.

The following instances of damage to vegetation by frosts, have been reported:

Denison, Texas.—Frost occurred in this vicinity on the morning of the 9th, causing considerable damage to early vegetables.

Savannah, Georgia.—The frost on the morning of the 10th, caused slight injury to vegetation in this community.

Cedar Keys, Florida.—On the morning the 10th, frost was reported from Rosewood, ten miles northeast of this station.

New River Inlet, North Carolina.—Crops in this vicinity were damaged by frost on the 12th.

Fort Davis, Texas.—A heavy frost occurred on the morning of the 21st, killing tender vegetation and damaging fruit trees.

Mobile, Alabama.—On the 24th, light frost occurred near this place and heavy frosts were reported from the central and northern portions of Mississippi and Alabama.

Thornville, Michigan, 30th.—The cold and dry weather of the month has materially injured the wheat crop.

ICE.

The formation of ice has been reported as follows:

Arkansas.—Lead Hill, 3d, 9th.

Illinois.—Edwardsville, 8th; Cairo, 11th.

Indiana.—Laconia, 8th.

Iowa.—Humbolt, 3d; Dubuque, 2d, 3d, 21st.

Maine.—Bangor, 11th, 14th, 15th; Portland, 22d.

Michigan.—Detroit, 1st, 3d.

Missouri.—Lexington, 8th.

Pennsylvania.—6th, 7th, 9th.

New York.—Albany, 22d; Buffalo, 29th.

Texas.—Fort Concho, 21st.

Tennessee.—Nashville, 9th.

Vermont.—Strafford, 22d, 23d, 24th, 26th.

Wisconsin.—La Crosse, 17th, 21st.

PRECIPITATION.

[Expressed in inches and hundredths.]

The distribution of rainfall over the United States and Canada for April, 1884, as determined from the reports from nearly eight hundred stations is exhibited on chart iii.

Table of excessive, and greatest and least monthly precipitation.

Station.	Specially heavy.			Largest monthly.	Smallest monthly.	
	Date.	Amt.	Duration	Amount.	Station.	Amt.
<i>Alabama.</i>						
Jackson.....				7.27		
Scottsborough.....	14, 15	3.38		7.27		
Tusculum.....	14, 15	4.00		7.19		
Decatur.....	14, 15	4.02		7.13		
Birmingham.....	14, 15	5.50		6.87		
Morgan.....				6.50		
Mobile.....	5, 6	2.01				
Do.....	20, 21	2.51				
Montgomery.....	19, 20	2.01				
Greenville.....	19, 20	2.05				
<i>Arkansas.</i>						
Prescott.....	18	11.06?		18.32?		
Do.....	30	5.00?				
Texarkana.....	14, 15	2.10		10.96		
Do.....	18, 19	3.10				
Do.....	28, 29, 30	4.09				
Little Rock.....	14	2.99		10.24		
Do.....	18, 19	3.19				
Mount Ida.....	28	3.05		8.30		
Newport.....	11, 12	3.21		7.05		
Monticello.....	14	2.00				
Do.....	18, 19	2.25				
<i>California.</i>						
San Luis Obispo.....				12.60		
Colfax.....				10.94		
Emigrant Gap.....				10.84		
Cisco.....				10.10		
Auburn.....				8.02		
Alcatraz Island.....				7.34		
Santa Cruz.....				6.78		
Angel Island.....	10	2.21		6.07		
Ione.....				6.51		
Hydesville.....				6.28		
Knoxville.....				6.19		
San Diego.....	9	2.00				
San Francisco.....	9, 10, 11	4.08				
Los Angeles.....	9, 10	2.32				
Oakland.....	12	3.37				
Do.....	15	2.00				
<i>Colorado.</i>						
Pueblo.....	7	2.25				
<i>Dakota.</i>						
Yankton.....	24, 25	2.00				
Fort Meade.....	27	4.32				
Fort Bennett.....	28, 29	2.15				
<i>Florida.</i>						
Fort Barrancas.....	5	2.60		6.95		
Do.....	21	2.15				
Cedar Keys.....	5, 6	2.35				
Pensacola.....	5	2.00				
Do.....	20, 21	2.10				
<i>Georgia.</i>						
Quitman.....	14, 15	4.28		10.26		
Do.....	21	3.00				
Cartersville.....	14, 15	5.26		7.50		
Gainesville.....	14, 15	5.48		7.51		
Athens.....	15	2.60	3 hours	6.09		
Newnan.....	14, 15	3.23		6.02		
Atlanta.....	14, 15	3.76				
Toccoa.....	14, 15	3.50				
Griffin.....	14, 15	2.29				
Way Cross.....	15	2.40				
Augusta.....	14, 15	2.24				
West Point.....	14, 15	2.20				
Allapaha.....	21, 22	2.04				
Madison.....	15, 16	2.03				
Forsyth.....	15	2.53				
Charlotte.....	21, 22	3.02				
Fort Gaines.....	20, 21	2.77				
<i>Indian Territory.</i>						
Fort Reno.....	30	2.76				
<i>Kansas.</i>						
Fort Scott.....	28	2.05		7.53		
West Leavenworth.....	17	2.00				
Do.....	18	2.50				
Do.....	21	2.00				
Independence.....	30	2.30				
<i>Louisiana.</i>						
Coushatta.....	19	2.91		6.74		
Shreveport.....	14	2.27		6.60		
Do.....	19, 20	2.08				
New Orleans.....	4, 5	2.99		6.48		
Minden.....	19, 20, 21	4.90		6.17		
Grand Coteau.....	4	3.81				
Whiteville.....	5	4.13				
Opelousas.....	5	3.06				
Natchitoches.....	13	2.00				
<i>Maine.</i>						
Eastport.....	16	2.27		6.83		
Gardiner.....	16	2.30		6.53		
Portland.....	15, 16	3.90		6.12		
<i>Massachusetts.</i>						
Provincetown.....	3	2.06		8.31		
<i>Michigan.</i>						
Marquette.....	14, 15	2.39				
<i>Mississippi.</i>						
Corinth.....	24	3.00		6.25		
Brookhaven.....	5, 6	2.19				
<i>Missouri.</i>						
Greenfield.....				6.50		
Pierce City.....	30	2.20				
<i>North Carolina.</i>						
Highlands.....	14	2.85				
Do.....	21	2.00				
Hatteras.....	15	2.31				

Table of excessive, and greatest and least monthly precipitation.—Continued.

Station.	Specially heavy.			Largest monthly.	Smallest monthly.	
	Date.	Amt.	Duration.	Amount.	Station.	Amt.
<i>North Carolina—Cont'd.</i>						
New-Berne.....	15	2.30				
Salisbury.....	22	2.01				
<i>South Carolina.</i>						
Greenville.....	14, 15	2.69				
Do.....	21, 22	2.07				
Spartanburg.....	14, 15	2.20				
Chester.....	20, 21	2.60				
Aiken.....	14	2.40				
<i>Tennessee.</i>						
Memphis.....	14	3.02				
Do.....	18, 19	2.19		8.60		
Grand Junction.....	14	2.91		7.34		
Do.....	18, 19	2.01				
Brownsville.....	14	3.09		6.24		
Ashwood.....	13	3.70		6.00		
Chattanooga.....	14, 15	2.62				
Milan.....	14	2.04				
Do.....	21	2.13				
<i>Texas.</i>						
Honey Grove.....				8.40		
Austin.....				7.78		
Palestine.....	18, 19	3.01		7.30		
Barnesville.....	18	3.50		7.00		
Galveston.....	4, 5	2.79				
Do.....	11	1.96				
Tyler.....	14	2.00				
Dallas.....	18, 19	2.00				
Concho.....	29	2.60				
New Umi.....	11	2.09				
Clarkeville.....	28	2.14				
<i>Utah.</i>						
Nephi.....				6.30		
<i>Wisconsin.</i>						
Franklin.....				6.30		

In the first column of the following table is shown the average precipitation for April in each of the various districts for several years, as determined from observations made at the Signal Service stations; in the second column are given the averages for April, 1884; and the third column shows the excess or deficiency of April, 1884, as compared with the average.

Average precipitation for April, 1884.

Districts.	Average for April. Signal-Service ob- servations.		Comparison of April, 1884, with the av- erage for sev- eral years.
	For sev- eral years.	For 1884.	
	Inches.	Inches	Inches.
New England	3.48	4.82	1.34 excess.
Middle Atlantic states	3.58	2.30	1.28 deficiency.
South Atlantic states	4.76	3.69	1.07 deficiency.
Florida peninsula	2.60	2.46	0.14 deficiency.
Eastern Gulf states	5.90	5.29	0.61 deficiency.
Western Gulf states	4.62	5.65	1.03 excess.
Rio Grande valley	0.74	0.75	0.01 excess.
Tennessee	5.83	5.62	0.21 deficiency.
Ohio valley	3.59	2.62	0.97 deficiency.
Lower lake region	2.22	1.31	0.91 deficiency.
Upper lake region	2.18	2.63	0.45 excess.
Extreme northwest	1.87	1.83	0.04 deficiency.
Upper Mississippi valley	3.01	2.58	0.43 deficiency.
Missouri valley	3.00	4.17	1.17 excess.
Northern slope	1.80	1.20	0.60 deficiency.
Middle slope	1.23	1.82	0.59 excess.
Southern slope	0.70	2.73	1.97 excess.
Southern plateau	0.44	0.96	0.52 excess.
Northern plateau	1.95	1.47	0.48 deficiency.
North Pacific coast region	3.68	3.55	0.47 excess.
Middle Pacific coast region	2.80	4.99	2.19 excess.
South Pacific coast region	1.04	2.16	1.12 excess.
Mount Washington, N. H.	4.36	3.29	1.07 deficiency.
Pike's Peak, Colo.	3.61	0.43	3.18 deficiency.
Salt Lake City, Utah.	2.40	2.89	0.49 excess.

In the northern plateau, northern slope, upper Mississippi, and Ohio valleys, Tennessee, lower lake region, east Gulf states, and on the Atlantic coast south of New England the average precipitation for April was below the normal. In those districts the deficiencies varied from 0.21 to 0.97, except in the middle and south Atlantic states, where they were 1.28 and 1.07 respectively. In the extreme northwest and Rio Grande valley the monthly precipitation was normal. On the Pacific coast, in the western Gulf states, Missouri valley, middle, and southern slopes, and southern plateau the monthly precipitation was in excess of the average, the departures averaging about 0.50 in the north Pacific coast region, middle slope, and south-

ern plateau; and in the other districts named they ranged from 1.03 in the west Gulf states to 2.19 in the middle Pacific coast region.

DEVIATIONS FROM AVERAGE PRECIPITATION.

The departures exhibited by the reports from the regular Signal Service stations are shown in the table of average precipitation for April, 1884. Voluntary observers report the following notes in connection with this subject:

Arkansas.—Lead Hill, Boone county: monthly precipitation, 3.87, is 1.34 below the April average of the two preceding years.

California.—Mr. Elwood Cooper, of Santa Barbara, Santa Barbara county, furnishes the following table of rainfall data for that place, with the accompanying remarks:

Seasons.	Precipitation.		
	Before January 1.	After January 1.	Total for season.
1870-71.....	3.00	6.00	9.00
1871-72.....	8.50	7.38	15.88
1872-73.....	4.19	7.31	11.50
1873-74.....	5.75	9.75	15.50
1874-75.....	4.25	16.89	20.94
1875-76.....	6.75	15.88	22.63
1876-77.....	0.03	6.50	7.13
1877-78.....	5.75	27.25	33.00
1878-79.....	8.12	6.38	14.50
1879-80.....	6.37	21.94	28.31
1880-81.....	13.50	3.00	16.50
1881-82.....	3.50	10.04	14.50
1882-83.....	1.31	11.88	13.19
Sums.....	71.68	150.95	222.64
Means.....	5.51	11.61	17.13
1883-84.....	3.81	29.25	33.06
Comparison of 1883-84 with average.....	-1.70	+17.64	+15.93

The above table shows that less than one-third of the average winter precipitation occurs before January 1st, and more than two-thirds occur after that date. In six of the years covered by the above record the rainfall after March 1st was two inches; in one year it was one inch; in one year there was no rainfall after February; and in five years the rains extended into April and early May.

The annual precipitation for California, as shown by the Smithsonian charts, prepared under the direction of the late Professor Henry, does not indicate the favorable or unfavorable conditions for the production of crops, for the reason that it gives the annual rainfall from January 1st to December 31st, while the result depends upon the rainfall from October to April, that is, the autumn, winter and spring rains determine the success or failure of the crops. For example, during the winter of 1876-7 the rainfall after January 1st was 6.50, and in November and December of the same year it was 5.75, giving a total of 12.25, or a sufficient amount to insure a fair average crop, while in that year the crops were almost a total failure throughout the state. The rainy season of 1883-4 has differed from any of the preceding years. The rains began at the most favorable season—the last of October and in early December—3.81 inches falling before the close of the year. The people of California were never more apprehensive of an impending drought than during January, 1884. Business interests suffered seriously in consequence of the prevalence of this opinion. Many theories were published indicating that the year 1884 would be one of drought. Tables were deduced showing such a probability; decades of dry years coming at certain periods, of which this was to be one. Still there has never been a year in which so much rain has fallen after January 1st, as has been the case in this year. The precipitation for that part of the rainy season preceding January 1st, compared with the average of the corresponding season, shows a deficiency of 1.70, while that of the succeeding months exhibits the unusually large excess of 17.64, and the total amount exceeds the largest precipitation of any previous year of the record.

Illinois.—Riley, Montgomery county: monthly precipitation, 2.85, is 0.21 in excess of the April average of the last twenty-three years.

Mattoon, Coles county: monthly precipitation, 4.16, is 0.29 above the April average of the last five years.

Anna, Union county: monthly precipitation, 3.80, is 0.80 below the April average of the last nine years.

Indiana.—Wabash, Wabash county: monthly precipitation, 2.34, is 0.37 below the April average of the last seven years.

Logansport, Cass county: monthly precipitation, 2.19, is 1.23 below the April average of a period of twenty-five years.

Kansas.—Lawrence, Douglas county: monthly precipitation, 5.62, is 2.63 in excess of the April average of the last sixteen years. The precipitation for the first four months of 1884 is 10.76, or 3.06 above the average for the corresponding period of sixteen years.

Wellington, Sumner county: monthly precipitation, 3.67, is 1.41 above the April average of the last six years.

Independence, Montgomery county: monthly precipitation, 4.85, is 1.46 above the April average of the last twelve years.

Maine.—Gardiner, Kennebec county: monthly precipitation, 6.53, is 3.10 in excess of the April average for a period of forty-eight years. The total precipitation for the first four months of 1884, is 24.62, or 10.54 above the average of the corresponding months of the last forty-eight years.

Maryland.—Fallston, Harford county: monthly precipitation, 1.94, is 1.42 below the April average of the last thirteen years.

Missouri.—Saint Louis: monthly precipitation, 3.92, is about the normal amount for April.

New York.—North Volney, Oswego county: monthly precipitation, 0.80, is 1.29 below the April average of a period of twelve years.

Palermo, Oswego county: monthly precipitation, 0.63, is 1.90 below the April average of the last thirty years, and is the smallest April precipitation of that period; the largest, 7.00, occurred in 1859.

Ohio.—Wauseon, Fulton county: monthly precipitation, 1.42, is 1.04 below the April average of a period of eleven years. The largest April precipitation, 4.81, occurred in 1880; the smallest, 1.31, occurred in 1872.

Texas.—New Ulm, Austin county: monthly precipitation, 4.68, is 0.53 above the April average of a period of twelve years.

Vermont.—Woodstock, Windsor county: monthly precipitation, 2.31, is 0.15 below the average of the last fifteen years.

Virginia.—Wytheville, Wythe county: monthly precipitation, 2.65, is 0.96 below the April average of a period of twenty years.

Variety Mills, Nelson county: monthly precipitation, 2.21, is 0.79 below the April average of the last five years.

West Virginia.—Helvetia, Randolph county: monthly precipitation, 2.70, is 1.33 below the April average of the last eight years.

Table of rainy and cloudy days, relative humidity, and dew-point for April, 1884.

Districts.	Rainy days.	Cloudy days.	Rel. humidity.*	Dew-point.
			Percentages.	°
New England.....	From 12 to 23	From 11 to 17	From 69.4 to 83.9	From 34.0 to 38.1
Middle Atlantic states.....	" 6 " 12	" 6 " 13	" 57.8 " 81.5	" 34.3 " 42.9
South Atlantic states.....	" 7 " 13	" 3 " 10	" 59.3 " 76.4	" 41.0 " 55.7
Florida peninsula.....	" 3 " 7	" 0 " 5	" 68.0 " 71.7	" 57.5 " 64.6
East Gulf states.....	" 6 " 12	" 5 " 11	" 63.9 " 72.5	" 49.2 " 56.6
West Gulf states.....	" 7 " 14	" 5 " 16	" 66.5 " 81.5	" 44.5 " 61.0
Rio Grande valley.....	" 4 " 6	" 3 " 11	" 61.4 " 76.8	" 57.9 " 62.7
Ohio valley.....	" 11 " 17	" 11 " 17	" 59.1 " 69.8	" 35.1 " 45.5
Tennessee.....	" 11 " 16	" 11 " 14	" 63.8 " 69.8	" 44.6 " 45.5
Lower lake region.....	" 7 " 14	" 9 " 15	" 62.7 " 76.7	" 30.9 " 33.8
Upper lake region.....	" 5 " 13	" 6 " 13	" 64.6 " 75.3	" 25.4 " 33.3
Extreme northwest.....	" 8 " 10	" 8 " 12	" 69.8 " 78.3	" 28.8 " 38.2
Upper Mississippi valley.....	" 8 " 16	" 10 " 15	" 58.0 " 68.1	" 32.1 " 38.5
Missouri valley.....	" 9 " 15	" 10 " 14	" 67.3 " 73.7	" 31.2 " 39.1
Northern slope.....	" 7 " 16	" 2 " 10	" 47.8 " 75.5	" 18.1 " 34.0
Middle slope.....	" 2 " 13	" 2 " 11	" 52.2 " 79.6	" 25.5 " 31.9
Southern slope.....	" 4 " 10	" 3 " 5	" 51.4 " 61.1	" 34.4 " 43.7
Southern plateau.....	" 0 " 10	" 1 " 5	" 31.9 " 64.3	" 23.8 " 34.1
Northern plateau.....	" 7 " 14	" 1 " 7	" 60.7 " 66.2	" 37.3 " 40.1
North Pacific coast region.....	" 12 " 18	" 7 " 18	" 68.7 " 85.1	" 42.7 " 45.1
Middle Pacific coast region.....	" 9 " 12	" 6 " 10	" 72.0 " 79.1	" 46.6 " 48.4
South Pacific coast region.....	" 1 " 10	" 2 " 6	" 44.8 " 79.7	" 42.0 " 51.0
Mt. Washington, N. H.....	Twelve	Three	91.8	33.3
Pike's Peak, Colo.....	Twenty-three	Eight	79.6	3.4

* Relative humidity corrected for altitude.

SNOW.

Snow fell in the various districts as follows:

New England.—1st to 7th, 9th to 11th, 18th, 21st to 23d, 29th. On Mount Washington, New Hampshire, snow fell on the 2d, 3d, 4th, 10th 11th, 12th, 16th to 19th, 25th, 29th.

Middle Atlantic states.—1st to 6th, 8th, 9th, 10th.

Western Gulf states.—Lead Hill, Arkansas, 8th; Fayetteville, Arkansas, 22d.

Ohio valley.—2d, 3d, 8th, 9th, 10th.
Lower lake region.—1st to 11th, 16th, 17th, 21st, 24th, 29th.
Upper lake region.—1st, 2d, 6th to 10th, 15th to 18th, 20th, 27th, 28th, 29th.
Extreme northwest.—4th to 9th, 15th, 18th, 27th to 30th.
Upper Mississippi valley.—1st, 2d, 6th to 9th, 20th, 22d.
Missouri valley.—1st, 5th to 9th, 19th to 22d.
Northern slope.—1st, 4th to 11th, 13th, 14th, 15th, 18th, 19th, 24th to 30th.
Middle slope.—1st, 2d, 4th, 6th to 9th, 11th, 12th, 13th, 18th to 21st, 26th, 30th.
 On Pike's Peak, Colorado, snow occurred on the 1st to 7th, 11th to 15th, 17th, 23d, 25th, 27th, 28th.
Southern slope.—Fort Davis, Texas, 20th; Fort Concho, Texas, 20th and 30th.
Southern plateau.—10th, 11th, 12th, 17th, 18th, 26th to 30th.
Middle plateau.—1st, 2d, 4th, 5th, 6th, 10th to 18th, 21st, 23d to 30th.
Northern plateau.—2d, 3d, 4th, 11th to 17th, 24th to 27th, 30th.
 Snow storms of unusual severity occurred during the month as follows:

Hartford, Connecticut.—One of the heaviest snow-falls of the winter occurred on the 2d, the snow falling to a depth of one foot.

Dayton, Ohio.—The snow storm of the 8th equalled in severity any that occurred during the winter, and was the heaviest ever experienced here at so late a date.

Mount Carmel, Northumberland county, Pennsylvania.—A heavy snow storm prevailed throughout the coal region on the 9th, the snow falling to a depth of seven inches. Many of the collieries suspended work and railroad travel was much impeded.

Wilkesbarre, Pennsylvania.—A heavy snow storm prevailed on the 9th; at Glen Summit the snow fell to a depth of fourteen inches, and at Hazleton to nineteen inches.

Fort Keogh, Montana.—The severest snow storm of the season prevailed on the 29th, the snow falling to a depth of eighteen inches.

Reports from Durango, La Plata county, Col., on the 16th, stated that the snow blockade, which had continued for seventy-six days preceding that date, had been raised, and it was expected that trains would be able to resume their regular trips on the 17th; a train arrived on the 16th, which was the first since February 3d. The report also stated that this was the most protracted snow blockade ever experienced in western Colorado, and that the damage resulting to business interests was incalculable. Great damage is expected to result from the melting of the snow, which covered the country from six to eight feet deep.

LARGEST MONTHLY SNOW-FALLS.

[Expressed in inches and tenths.]

The following are the largest monthly snow-falls reported from the various states and territories during the month:

California.—Summit, 126; Cisco, 98; Emigrant Gap, 48; Truckee, 37; Alta, 26; Boca, 19; Colfax, 7.

Colorado.—Denver, 18; Pike's Peak, 4.3; Pueblo, 3.2.

Connecticut.—Hartford, 10.5; Southington, 10; Bethel, 8.

Dakota.—Morrison, 9; Bismarck, 4.

Illinois.—Riley, 10.5; Sycamore, 10.5.

Indiana.—Griffin Station, 3.8; Logansport, 3.2; Wabash, 3.

Iowa.—Manchester, 5.5; Ottumwa, 4.5; Independence, 3; Monticello, 3.

Kansas.—Fort Scott, 18; Lawrence, 6; Wyandotte, 5; Allison, 3.

Maine.—Eastport, 5.3; Gardiner, 3.

Maryland.—Fallston, 7.5.

Massachusetts.—Princeton, 26; Worcester, 23.7; Westborough, 12; Amherst, 10; Milton, 10; Boston, 9.5; Taunton, 5; Fall River, 4.

Michigan.—Marquette, 12; Traverse City, 9; Mottville, 7; Hillsdale, 6.3; Grand Haven, 4.2; Northport, 4; Escanaba, 3.8.

Minnesota.—Chester, 7; Minneapolis, 3.8.

Montana.—Helena, 8.9; Fort Maginnis, 6; Fort Custer, 4.5.

Nebraska.—Genoa, 4; Stockham, 3.

Nevada.—Halleck, 18; Toano, 17.8; Otego, 17.5; Battle Mountain, 10.5; Antrim, 10; Wells, 8; Tecoma, 7.1; Carson City, 7; Elko, 7; Palisade, 5; Winnemucca, 5; Hot Springs, 4; Reno, 3.5; Carlin, 3.

New Jersey.—Caldwell, 3.

New Hampshire.—Mount Washington, 32.8

New York.—Dannemora, 17.9; Albany, 11; Mountainville, 9; Menand Station (near Albany), 8.8; Rochester, 6; White Plains, 4; Ithaca, 3.9; Humphrey, 3.

Ohio.—Cleveland, 8; Sandusky, 6; Wauseon, 4.9; Toledo, 4.

Oregon.—Lakeview, 4.

Pennsylvania.—Drifton, 23.9; Dyberry, 18; Grampian Hills, 8; Erie, 4.3.

Utah.—Nephi, 6.5; Terrace, 4.

Vermont.—Dorset, 9; Strafford, 9; Woodstock, 6; Newport, 5.8; Lunenburg, 4.

Virginia.—Norfolk, 8.

West Virginia.—Helvetia, 3.8.

Wisconsin.—Ripon, 10.1; Franklin, 9; Embarras, 8.2; Manitowoc, 6.1; Milwaukee, 5.8; Sussex, 5; Madison, 4.2; Beloit, 3.5; Neilsville, 3.5; Evansville, 3.

Wyoming Territory.—Fort Bridger, 5.8.

DEPTH OF UNMELTED SNOW ON GROUND AT END OF MONTH.

[Expressed in inches and tenths.]

Colorado.—Pike's Peak, 42; Denver, 10.

Dakota.—Deadwood, 5.

New Hampshire.—Mount Washington, 12.

Vermont.—Dorset, trace in mountains; Strafford, only in places.

SNOW FROM A CLOUDLESS SKY.

Portland, Maine.—A few flakes of snow fell from a cloudless sky at 1.45 a. m. of the 23d.

SLEET.

Sleet fell in the several states and territories during the month, as follows:

Connecticut.—New Haven, 2d.

Dakota.—Huron, 7th; Fort Sisseton, 28th.

Idaho.—Boisé City, 14th.

Illinois.—Chicago, 20th; Springfield, 22d.

Indiana.—Logansport, 22d.

Iowa.—Independence, 1st; Davenport, 1st, 2d, 7th, 20th.

Kansas.—Fort Scott, 11th.

Maine.—Eastport, 15th.

Massachusetts.—Provincetown, 4th.

Michigan.—Kalamazoo, 7th; Marquette, 14th, 15th; Escanaba, 1st, 15th, 16th; Alpena, 20th.

Missouri.—Pierce City, 11th; Saint Louis, 21st.

Montana.—Fort Ellis, 14th.

Nebraska.—Omaha, 19th.

New Hampshire.—Mount Washington, 17th, 18th.

New York.—Buffalo, 1st, 2d; Oswego, 2d, 3d, 4th, 5th.

New Mexico.—Fort Union, 4th.

Ohio.—Cincinnati, 2d; Wauseon, 2d; Portsmouth, 8th; North Lewisburg, 21st; Columbus, 22d; Jacksonburg, 22d.

Rhode Island.—Narragansett Pier, 2d; Block Island, 2d.

Texas.—Indianola, 20th; Fort Concho, 20th.

Utah.—Salt Lake City, 26th.

Virginia.—Fort Myer, 22d.

Wisconsin.—Milwaukee, 7th.

HAIL.

Manhattan, Riley county, Kansas.—A hail storm occurred on the 18th. No serious damage was done at this place, but at a point five miles northward considerable window-glass was broken by the hail stones, which were from two to two and one-half inches in diameter.

Fort Stockton, Pecos county, Texas.—On the 18th a heavy hail storm occurred in this county on the Pecos river about forty miles north-northwest of Fort Stockton. The storm began shortly after 10 p. m., the hail stones being very large and fell with such force as to cause serious injury to stock.

Fairbury, Jefferson county, Nebraska.—On the 28th, a severe hail storm occurred twelve miles northwest of this place, the hail stones covering the ground to a depth of one and one-half inches.

The dates on which hail fell in the various states and territories are as follows:

Alabama.—Green Springs, 14th.

Arizona.—Prescott, 10th; Wickenburg, 11th; Maricopa and Fort McDowell, 29th; Fort Bowie, 28th; Fort Grant, 30th.

Arkansas.—Little Rock, 13th, 18th.

California.—Red Bluff, 26th; San Diego, 27th.

Colorado.—Grand Junction, 28th; Fort Lyon, 30th.

Dakota.—Fort Yates, 29th.

District of Columbia.—Washington, 1st, 2d, 22d.

Georgia.—Atlanta and Augusta, 15th.

Illinois.—Chicago, 1st; Rockford, 9th; Riley, 14th.

Indiana.—Sunman, 1st; Terre Haute, 1st, 22d; Vevay, 2d, 6th, 8th; Jeffersonville, 15th; Griffin station, 27th.

Iowa.—Dubuque, Humboldt and Monticello, 1st; Independence, 1st, 7th, 14th; Indianola and Ottumwa, 14th; Des Moines, 26th.

Kansas.—Emporia, 3d, 4th, 7th, 8th, 9th, 10th, 16th, 23d, 24th; Allison, 6th, 18th, 28th; West Leavenworth, 7th; Fort Scott, 11th; Wellington, 17th, 18th; Dodge City, Salina, and Westmoreland, 18th; Topeka and Wyandotte, 26th; Manhattan, 18th, 28th; Sherlock, 28th; Elk Falls, 29th.

Kentucky.—Frankfort and Richmond, 15th.

Louisiana.—Liberty Hill, 14th, 17th, 27th.

Maryland.—Ocean City, 8th; Emmitsburg, 22d.

Massachusetts.—Provincetown, 2d, 9th; Somerset, 2d, 11th.

Michigan.—Detroit, Lansing, and Swartz Creek, 1st; Port Huron, 27th; Kalamazoo, 30th.

Minnesota.—Currie, 14th; Chester, 26th, 27th; Saint Vincent, 29th.

Missouri.—Pierce City, 18th.

Montana.—Fort Ellis, 13th; Fort Assinaboine, 25th.

Nebraska.—Marquette, 6th, 7th, 27th; Red Willow, 13th; Omaha, 18th; Genoa, 26th, 28th; Stockham, 28th.

Nevada.—Carson City, 9th, 16th; Fort McDermitt, 12th, 26th.

New Jersey.—Vineland, 2d; Moorestown, 9th; Readington, 16th.

New Mexico.—Fort Union, 5th; Fort Wingate, 10th, 13th.

New York.—New York City and Mountainville, 2d; Humphrey, 2d, 8th.

North Carolina.—Weldon, 2d; Highlands, 14th; New River Inlet, 15th.

Ohio.—Cincinnati and College Hill, 1st; Sandusky, 2d; Columbus, 15th; Jacksonborough and North Lewisburg, 22d.

Oregon.—Portland, 14th; Albany, 15th, 27th; Roseburg, 27th.

Pennsylvania.—Fallsington and Leetsdale, 2d; Wellsborough, 9th; Pittsburg, 25th.

Tennessee.—Chattanooga, 2d; Memphis, 14th.

Texas.—Fort Davis, 4th; Indianola, 5th; Fort Clark, 5th, 14th, 27th; Fort Elliott, 28th.

Utah.—Nephi, 10th, 12th, 14th, 28th; Salt Lake City, 13th, 18th, 25th, 28th.

Virginia.—Accotink and Johnstown, 2d; Fort Myer, 2d, 22d; Wytheville, 15th.

Washington Territory.—Olympia, 11th; Spokane Falls, 25th; Fort Spokane, 29th.

West Virginia.—Helvetia, 25th.

Wisconsin.—Milwaukee, 1st.

COTTON REGION REPORTS.

Temperature and rainfall observations in the cotton districts were resumed April 1st.

In the table below are given the averages for the several districts for April, 1884, with the means for the same months in the two preceding years. A comparison of the rainfall shows deficiencies in all but three districts, viz., those of Charleston, Galveston, and Little Rock, where excesses of 1.04, 2.80, and 0.90 are reported. Large deficiencies occurred in the districts of Mobile, Montgomery, and Vicksburg, where they were 4.66, 3.19, and 2.96, respectively.

The means of the maximum and minimum temperatures for April, 1884, were below the means of the preceding years in all districts, the departures varying from 2° 2 to 6° 6.

Temperature and rainfall data for the cotton districts, April.

Districts.	Rainfall.		Temperature.								Extremes for April, 1884.	
	Average for April of two preceding years.	Average for April, 1884.	Departures.	Maximum.			Minimum.					
				Mean for April of two preceding years.	Mean for April, 1884.	Departures.	Mean for April of two preceding years.	Mean for April, 1884.	Departures.			
New Orleans.....	6.31	5.54	— 0.77	81.0	75.4	— 5.6	59.8	56.7	— 3.1	87	35	
Savannah.....	4.69	3.23	— 1.46	80.8	77.5	— 3.3	59.1	55.6	— 3.5	92	15	
Charleston.....	3.12	4.16	+ 1.04	77.0	77.6	+ 0.6	54.7	50.4	— 4.3	90	31	
Atlanta.....	5.44	5.09	— 0.35	75.2	70.8	— 4.4	53.0	47.9	— 5.1	91	27	
Wilmington.....	4.42	3.17	— 1.25	72.5	69.9	— 2.6	49.3	46.8	— 2.5	88	21	
Memphis.....	6.11	5.98	— 0.13	74.9	69.3	— 5.6	53.3	49.5	— 3.8	87	25	
Galveston.....	1.74	4.54	+ 2.80	80.8	75.3	— 5.5	57.6	51.6	— 5.9	88	25	
Vicksburg.....	7.48	4.52	— 2.96	77.8	74.7	— 3.1	53.5	54.0	— 2.2	89	26	
Montgomery.....	0.82	3.63	— 3.19	73.3	74.7	+ 1.4	55.4	49.8	— 5.6	94	26	
Augusta.....	4.81	4.49	— 0.32	77.5	71.0	— 6.5	54.7	48.1	— 6.6	93	20	
Little Rock.....	5.76	6.66	+ 0.90	75.0	72.2	— 3.4	52.9	47.3	— 5.6	89	20	
Mobile.....	6.30	3.64	— 4.66	80.0	75.9	— 4.1	57.2	52.7	— 4.5	91	36	

WINDS.

The most frequent directions of the wind during April, 1884, at the Signal Service stations, are shown on chart ii. by arrows flying with the wind. In the Gulf states the most frequent directions were southerly; in the Ohio valley, Tennessee and the south Atlantic states, from southwest to northwest; in New Jersey, Maryland, and Virginia, northwesterly; in New England, from northwest to southwest; in the lake region, upper Mississippi valley, and north Pacific coast region, variable; in the Missouri valley, northerly; in California, from south to west.

HIGH WINDS.

On the summit of Mount Washington, New Hampshire, wind velocities of fifty or more miles per hour occurred on the following dates: 1st, 3d, 4th, 5th, 12th, 13th, 15th, 16th, 17th, 22d, 23d, 28th, the highest velocities being 92, nw., 4th, (maximum for month); 86, se., 15th; 80 s., 16th.

On the summit of Pike's Peak, Colorado, the maximum velocity of the month, 80 nw., occurred on the 1st; and velocities of fifty or more miles per hour occurred on the 7th, 8th, 11th, 13th, 14th, 15th, 16th, 17th, 24th, 25th, 26th, 28th.

Other high winds occurred during the month as follows:

Fort Maginnis, Montana, 52, w., 18th.

Dodge City, Kansas, 64, se., 28th.

West Las Animas, Colorado, 50, nw., 13th.

Yankton, Dakota, 56, se., 29th.

Indianola, Texas, 56, n., 20th.

Duluth, Minnesota, 50, ne. 14th.

Milwaukee, Wisconsin, 53, sw., 27th.

Eastport, Maine, 50, ne., 3d.

Sandy Hook, New Jersey, 57, nw., 3d.

Cape May, New Jersey, 60, nw., 3d; 56, w., 9th; 78, w., 10th.

Delaware Breakwater, Delaware, 52, sw., 9th.

Fort Macon, North Carolina, 52, sw., 2d.

TOTAL MOVEMENTS OF THE AIR.

[In miles.]

In the following table are given the stations reporting the largest and smallest total movements of the air in each of the various districts:

Districts.	Stations reporting largest.	Miles.	Stations reporting smallest.	Miles.
New England.....	Block Island, R. I.....	9,941	Eastport, Maine.....	6 283
Middle Atlantic states.....	Sandy Hook, N. J.....	12,155	Lynchburg, Va.....	3,391
South Atlantic states.....	Fort Macon, N. C.....	10,790	Augusta, Ga.....	2,801
Florida peninsula.....	Cedar Keys.....	7,536	Sanford.....	5,085
Eastern Gulf states.....	Pensacola, Fla.....	6,325	New Orleans, La.....	4,313
Western Gulf states.....	Indianola, Tex.....	12,257	Little Rock, Ark.....	4,528
Ohio valley.....	Louisville, Ky.....	6,341	Cincinnati, Ohio.....	4,619
Tennessee.....	Nashville.....	5,427	Memphis.....	4,667
Lower lake region.....	Sandusky, Ohio.....	10,407	Detroit, Mich.....	5,582
Upper lake region.....	Milwaukee, Wis.....	8,870	Chicago, Ill.....	6,384
Extreme northwest.....	Fort Buford, Dak.....	7,573	Saint Vincent, Minn.....	4,755
Upper Mississippi valley.....	Saint Louis, Mo.....	10,160	Dubuque, Iowa.....	4,905
Missouri valley.....	Yankton, Dak.....	8,397	Omaha, Neb.....	4,876
Northern slope.....	North Platte, Neb.....	9,067	Deadwood, Dak.....	2,932
Middle slope.....	Dodge City, Kan.....	11,553	Denver, Colo.....	4,939
Southern slope.....	Fort Concho, Tex.....	7,140	Fort Davis, Tex.....	5,851
Southern plateau.....	Prescott, Ariz.....	6,275	El Paso, Tex.....	4,449
Northern plateau.....	Dayton, Wash. T.....	4,622	Lewiston, Idaho.....	1,973
North Pacific coast region.....	Tatoosh Island, W. T.....	7,444	Olympia, Wash. T.....	1,574
Middle Pacific coast region.....	San Francisco, Cal.....	6,633	Sacramento, Cal.....	5,609
South Pacific coast region.....	San Diego, Cal.....	4,770	Yuma, Ariz.....	4,458

On the summits of Mount Washington, New Hampshire, and Pike's Peak, Colorado, the total movements of the air were 15,970 (incorrect on account of frost-work), and 16,765 miles, respectively.

LOCAL STORMS.

Local storms occurred during April as follows:

Alabama.—Huntsville, Madison county: a severe storm occurred eleven miles east of this place during the night of the 1-2d, which destroyed buildings and caused loss of life.

Reports from Chattanooga, Tennessee, on the 2d, stated that a destructive tornado passed over the northern portions of Alabama and Georgia during the night of the 1-2d. It appears to have been most destructive in the vicinity of Collinsville, De Kalb county, Alabama, and in Dade county, Georgia. Near Huntsville, Madison county, Georgia, several persons were killed. The path of the tornado was about three hundred yards in width.

Auburn, Lee county: at about noon of the 15th a tornado occurred a few miles south of this place, which caused considerable damage for a distance of about eight miles. There were four farms in the immediate track of the storm, all of which sustained damage. Twelve houses were destroyed, much fencing swept away, and two persons injured. This storm originated about four miles southwest of Auburn, and passed eastward into Georgia. In that state a number of persons were killed and a large amount of damage done.

Decatur, Morgan county: a storm occurred about seven miles east of this place on the evening of the 15th, causing much damage to buildings and fencing.

Florida.—Jacksonville: during the storm of the 2d, the steamer "Seminole," was blown ashore one mile south of this station, and other damage caused.

Georgia.—Columbus, Muscogee county: a violent wind and rain storm passed over this city on the night of the 14-15th. The rainfall was very heavy, more than three inches having fallen in three hours.

Chipley, Harris county: a destructive tornado passed over this county at 2.30 a. m. of the 15th. Forty buildings were destroyed and seven persons killed. At Merriwether a large amount of property was destroyed and six persons killed. Reports from Sandtown, Campbell county, state that ten persons were killed in that vicinity and that much property was destroyed.

Indiana.—Muncie, Delaware county: a destructive tornado passed through this county on the afternoon of the 1st. The village of Oakland, seven miles south of Muncie, was almost entirely destroyed. Of thirty houses all but three were wrecked. About fifty persons were more or less injured and four were instantly killed.

Iowa.—Fort Dodge, Webster county: a severe storm occurred during the night of the 27-28th, blowing down and unroofing buildings.

Kansas.—Atchison: a violent storm occurred on the 18th, beginning at 7.30 p. m., and lasting about one hour. The rain-

fall was very heavy and flooded the streets. The neighboring creeks rose rapidly, washing away numerous bridges.

Garnett, Anderson county: at 5.30 p. m. of the 27th a tornado cloud was observed passing through the western part of this county. The cloud was almost vertical near the earth, but the upper portion was inclined northward. It formed near Westphalia, seventeen miles west of Garnett and passed north-eastward for a distance of eight or nine miles. Its course was over an open prairie, consequently but little damage was done. The cloud was plainly visible from Garnett for about thirty minutes, and moved so slowly that it was successfully photographed during its progress. At about three miles north of Westphalia a wagon laden with lumber was struck by the tornado. The lumber was scattered over the prairie, and the driver and horses were carried a considerable distance in the air. No precipitation accompanied the storm.

Coffeyville, Montgomery county: a destructive wind storm occurred on the afternoon of the 30th. Several barns were blown down and numerous buildings were unroofed.

Maryland.—Baltimore: vessels arriving at this port on the 5th, report that an unusually severe storm prevailed in the Chesapeake bay on the 4th, causing numerous disasters.

Mississippi.—Vicksburg: on the evening of the 1st, a severe storm occurred at South station, fourteen miles east of Vicksburg, where two dwellings were destroyed. On the afternoon of the 14th a severe storm passed over Vicksburg, which caused considerable damage to buildings, signs, trees, etc.

Black Hawk, Carroll county: this place was visited by a destructive tornado on the 14th, which destroyed several dwellings.

Grenada: on the afternoon of the 14th, a very destructive storm passed one mile south of this place, demolishing dwellings and blowing down trees and fencing.

West Point: a violent wind and rain storm occurred on the afternoon of the 14th, prostrating trees and fences and demolishing small buildings. Reports from Jackson and Beauregard state that the storm at those places was very severe.

Missouri.—Saint Joseph, 28th: reports from Union Star, De Kalb county, state that on the evening of the 24th that place was visited by a violent tornado, which destroyed several buildings. The storm occurred at about six o'clock and was of very short duration. Its path was about fifty feet in width, and the cloud was funnel-shaped.

Carthage, Jasper county: on the night of the 26-27th, a tornado occurred in this county about ten miles south of Carthage. Several farm houses and much fencing were destroyed.

Montana.—Helena: a violent wind and rain storm visited this section during the night of the 27-28th, which caused damage to property in this town and vicinity.

North Carolina.—Scott's Hill: a destructive westerly storm occurred on the 2d.

Hatteras: during a strong northwesterly gale on the 3d the steamer "W. C. Pierepont" went ashore.

Fort Macon: a severe thunder storm prevailed from 8 to 10.30 p. m. of the 15th; wind velocity forty miles.

Ohio.—Greenville, Darke county: at 6.30 p. m. of the 1st a violent tornado passed a few miles south of this place. The tornado passed in a southeasterly direction and destroyed numerous residences and out-buildings.

Columbus: a destructive storm passed over Reynoldsburg, twelve miles east of this city, during the night of the 1-2d. Several dwellings and out-buildings were blown down and great damage was done to orchards and fencing. At Dublin, Franklin county; numerous buildings were damaged. The storm was also very destructive at Mechanicsburg, Joysville, Mutual, and Bowlsville.

Toledo: a strong gale prevailed on the 22d, the wind reaching a velocity of forty-eight miles. Considerable damage was done in this city and adjacent country.

Dayton, Montgomery county: between 4 and 5 p. m. of the 27th a destructive storm passed over the southern portions of Montgomery and Greene counties. It appears to have origi-

nated in the vicinity of Woodford, a village ten miles south of Dayton, and moved in an easterly course. At Alexandersville, six miles south of Dayton, a number of buildings were destroyed and several persons were injured. The tornado was also very destructive at Woodburn, Miamisburg, Bellbrook, Carrollton, and Jamestown. At Jamestown six persons were killed and about two-thirds of the buildings in town were ruined. The damage is estimated at from \$150,000 to \$200,000. At Bellbrook about fifteen buildings were more or less damaged.

Pennsylvania.—Pittsburg: on the morning of the 2d the Monongahela valley was visited by a violent storm, which caused a large amount of damage. The storm's course was along the south side of the Monongahela river. At Homestead, Alleghany county, several buildings were blown down.

South Carolina.—Summerville, Berkeley county: a violent northwesterly wind storm prevailed on the 2d. No damage occurred other than the blowing down of fences and a few trees.

Columbia: a very high wind prevailed on the 2d, which blew down fences and trees and caused slight injury to a few buildings.

Texas.—Del Rio, Kenney county: a tornado occurred between 6 and 7 p.m. of the 30th, wrecking several buildings. The damage to the town is estimated at \$10,000.

Dallas: on the morning of the 18th, a violent wind and rain storm passed over this city. A school building was blown down and ten of thirty-two pupils were more or less seriously injured. Trees and fencing throughout the city were blown down. Very heavy rain accompanied the storm. This region was also visited by a heavy rain and wind storm on the night of the 27-28th. The rainfall was remarkably heavy. On the morning of the 28th, it was observed that the current in Trinity river had changed, the water running in the opposite direction. This phenomenon was supposed to be due to the swollen condition of the river and its tributaries below Dallas. Early settlers state that a similar phenomenon occurred once before, about twenty-five years ago.

Virginia.—Lynchburg: a severe wind storm prevailed during the night of the 2-3d. Several houses were blown down in the adjoining counties, and considerable damage was caused in the suburbs of this city.

Wisconsin.—Milwaukee: numerous disasters occurred on Lake Michigan during the storm of the 20th.

NAVIGATION.

OPENING OF NAVIGATION.

Lake Ontario.—Rochester, New York: navigation was resumed on the 3d, the first boat of the season arriving at Charlotte on that date.

Lake Erie.—Buffalo, New York: the steamer "William Edwards" left this port for Chicago on the 22d, being the first departure of the season.

Erie, Pennsylvania: navigation was resumed on the 19th.

Lake Huron.—Port Huron, Michigan: the steamer "Concord" left for the upper ports on the 8th, being the first departure of the season. The steamer "Flora," from Detroit, reached this port on the 9th, being the first arrival of the season.

Alpena, Michigan: the steamer "Flora," from Detroit, arrived on the 11th, being the first boat of the season.

Straits of Mackinac.—Mackinaw City, Michigan: the first arrival of the season occurred on the 24th; navigation was resumed on the 28th.

Lake Michigan.—Milwaukee, Wisconsin: the steam barge "William Edwards," bound from Buffalo to Chicago, passed this port on the 27th, and was the first boat of the season to pass through the Straits of Mackinac. The first steamer from the lower lakes arrived on the 30th.

Escanaba, Michigan: the first boat of the season arrived on the 21st.

Lake Superior.—Marquette, Michigan: the tug "A. L. Johnson," from Sandusky, Ohio, arrived on the 30th. Although

considerable ice remained in the lake on that date, navigation was considered open for the season.

Fort Brady, Michigan: the first boat of the season arrived on the 25th.

Mississippi river.—Dubuque, Iowa: the first steamer of the season arrived on the 7th.

Saint Paul, Minnesota: the steamer "Saint Paul," the first boat of the season, from Saint Louis, arrived on the 16th, having experienced no difficulty in her passage upward.

Missouri river.—Leavenworth, Kansas: the steamer "Montana," the first boat of the season from Saint Louis, arrived on the 7th.

Yankton, Dakota: the first steamer of the season arrived on the 11th.

Fort Bennett, Dakota: the first steamer of the season arrived on the 12th.

North Branch Canal.—Catawissa, Columbia county, Pennsylvania: navigation was resumed on the 7th.

STAGE OF WATER IN RIVERS.

The Mississippi, Missouri and Ohio rivers were highest at the beginning and lowest at the close of the month, the lower Mississippi continuing above the danger line throughout the month. At Omaha, Nebraska, the Missouri river reached a point one foot above the danger line on the 6th. The Ohio river continued low throughout its course during the whole month, the highest stage at Cincinnati, Ohio, on the 6th, being more than eighteen feet below the danger line.

In the following table are shown the danger points at the various river stations; the highest and lowest stages for April, 1884, with the dates of occurrence; and the monthly ranges:

Heights of rivers above low-water mark, April, 1884.

Stations.	Danger-point on gauge.	Highest water.		Lowest water.		Monthly range.
		Date.	Height.	Date.	Height.	
<i>Red River:</i>						
Shreveport, Louisiana.....	29 9	30	20 6	13	16 7	3 11
<i>Arkansas:</i>						
Little Rock, Arkansas.....	33 0	29	13 10	11	7 5	6 5
Fort Smith, Arkansas.....	25	3 3	12	—1	7†	4 10
<i>Missouri:</i>						
Yankton, Dakota.....	20 0	4	20 1	25	6 6	13 7
Omaha, Nebraska.....	16 0	6	17 0	26, 27, 28	7 5	9 7
Leavenworth, Kansas.....	21 0	9	17 11	29	10 8	7 3
<i>Mississippi:</i>						
Saint Paul, Minnesota.....	14 6	3	9 10	27	6 0	3 10
La Crosse, Wisconsin.....	18 0	1	8 1	30	6 0	2 1
Dubuque, Iowa.....	21 10	3, 4	13 2	22, 23, 24	10 6	2 8
Davenport, Iowa.....	15 0	4	11 7	25, 27, 28	8 2	3 5
Keokuk, Iowa.....	14 6	1	16 7	29, 30	8 10	7 9
Saint Louis, Missouri.....	30 0	9	28 2	30	20 10	7 4
Cairo, Illinois.....	40 0	1	47 11	30	37 4	10 7
Memphis, Tennessee.....	34 0	2	34 0	30	30 5	3 7
Vicksburg, Mississippi.....	41 0	1	47 8	26 to 30	45 2	2 6
New Orleans, Louisiana *.....	—2 6	1, 2, 3, 5, 6	—0 6	28, 29, 30	—1 10	1 4
<i>Ohio:</i>						
Pittsburg, Pennsylvania.....	20 0	4	12 6	25	3 8	8 10
Cincinnati, Ohio.....	50 0	6	31 8	16, 22	17 8	14 0
Louisville, Kentucky.....	24 0	1	11 8	19	7 7	4 1
<i>Cumberland:</i>						
Nashville, Tennessee.....	42 0	1	22 7	14	7 2	15 5
<i>Tennessee:</i>						
Chattanooga, Tennessee.....	33 0	17	16 11	13	6 6	10 5
<i>Monongahela:</i>						
Pittsburg, Pennsylvania.....	29 0	4	12 6	25	3 8	8 10
<i>Savannah:</i>						
Augusta, Georgia.....	16	27 11	12	8 3	19 8	
<i>Willamette:</i>						
Portland, Oregon.....	28	11 5	4	3 7	7 10	
<i>Sacramento:</i>						
Red Bluff, California.....	15	21 0	7	4 0	17 0	
Sacramento, California.....	20, 21, 22	23 6	7, 8	19 9	3 9	
<i>Mobile:</i>						
Mobile, Alabama.....	14	17 4	9	14 11	2 5	
<i>Colorado:</i>						
Yuma, Arizona.....	21	20 4	1	17 8	2 8	

* Below high-water mark of 1874 and 1883.

† below bench-mark.

ICE IN RIVERS AND HARBORS.

Kennebec river.—Portland, Maine: ice left the Kennebec river on the 10th, on which date navigation was resumed after a suspension of one hundred and twenty-nine days.

Kenduskeag creek.—Bangor, Maine: the breaking of the ice-